

**CERTIFICATION DESIGN LETTER
FOR AREA 9, PHASE III
ABANDONED OUTFALL LINE – PART TWO**

**FERNALD CLOSURE PROJECT
FERNALD, OHIO**



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U.S. DEPARTMENT OF ENERGY

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LIST OF ACRONYMS AND ABBREVIATIONS

| | |
|--------|--|
| A1PII | Area 1, Phase II |
| A9PIII | Area 9, Phase III |
| ASCOC | area-specific constituent of concern |
| ASL | analytical support level |
| CDL | Certification Design Letter |
| CERCLA | Comprehensive Environmental Response, Compensation and Liability Act |
| COC | constituent of concern |
| CRDL | contract required detection limit |
| CU | certification unit |
| DOE | U.S. Department of Energy |
| dpm | Disintegrations per Minute |
| FCP | Fernald Closure Project |
| FRL | final remediation level |
| MDL | minimum detection level |
| mg/kg | milligrams per kilogram |
| NPDES | National Pollutant Discharge Elimination System |
| OU5 | Operable Unit 5 |
| pCi/g | picoCuries per gram |
| ppm | parts per million |
| PSP | Project Specific Plan |
| RCRA | Resource Conservation and Recovery Act |
| RI/FS | Remedial Investigation/Feasibility Study |
| ROD | Record of Decision |
| SCQ | Sitewide CERCLA Quality Assurance Project Plan |
| SED | Sitewide Environmental Database |
| SEP | Sitewide Excavation Plan |
| UCL | Upper Confidence Limit |
| VSL | validation support level |

4.0 CERTIFICATION APPROACH

4.1 CERTIFICATION DESIGN

The certification design for A9PIII Part Two follows the general approach outlined in Section 3.4 of the SEP and encompasses the riverbank around the abandoned outfall line discharge. The CU design is depicted in Figure 4-1 and the sample locations are depicted in Figures 4-2, 4-3, and 4-4.

Two CUs have been designed for this certification effort. The CU numbering sequence, which started in A9PIII - Part One, will continue into A9PIII - Part Two. Therefore, the CUs for A9PIII - Part Two will be numbered CU 5 and CU 6. CU 5 represents the surface of the area after the riprap has been removed and CU 6 represents the resulting trench, which is between the sheet pilings, after the outfall line has been removed (western section of CU 6) as well as the section of abandoned outfall line that rests on a sand bar in the Great Miami River (eastern section of CU 6). The CUs are shown on Figure 4-1.

The certification design for CU 5 follows the general approach outlined in Section 3.4 of the SEP. Within CU 5, 16 random sampling locations have been identified to provide comprehensive coverage of the CU. To accomplish this, CU 5 was divided into 16 approximately equal sub-CUs; and within each sub-CU, a random sampling location was generated. Also, all sample locations within CU 5 are separated by a prescribed minimum distance, which is calculated as a function of the CU size. All sub-CUs and planned A9PIII certification sampling locations for CU 5 are shown on Figure 4-2.

The certification design for the western section of CU 6 follows the same approach described in the CDL for A9PIII Abandoned Outfall Line - Part One (DOE 2004c). The western section of CU 6 extends eastward to a distance where the pipe exits the bank. The outfall line continues eastward where it is encased in riprap that is supported by the sheet pilings. Because the size of the excavation (CU 6 west) was predetermined, the certification sampling locations were spaced evenly across the excavation with one location falling within each of the sub-CUs (12 for CU 6 west and the remaining 4 for CU 6 east). This will allow for more concentrated sampling (i.e., the samples are spaced 5.64 feet apart) and ensure the excavation activities had no effect on the soil in A9PIII. The four remaining certification sampling locations in CU 6 east were also spaced evenly across the approximate area underlying the abandoned outfall line. Additionally, two sampling locations will be placed to account for the section of piping that

rolled onto the bank near CU 6 east. All sub-CUs and planned A9PIII certification sampling locations for CU 6 are shown on Figures 4-3 (CU 6 west) and 4-4 (CU 6 east).

Radiological controls personnel will monitor the riprap that remains outside of the project boundary on the western riverbank. If contaminated material is found outside of the project boundary, then the CU 5 boundary will be expanded and additional samples will be collected.

Certification sampling locations will be surveyed in the field for CU 5 and CU 6 west; however, CU 6 west shall also be offset, and flagged on the northern excavation fence. The four locations on the eastern section of CU 6 will be field located, flagged, and surveyed in the field after the abandoned outfall line has been removed. If there is evidence of leakage from the western section of the outfall line (e.g., broken, cracked, or disjointed piping), then a biased sample location will be flagged on the fence line, and samples will be collected from the floor and both the north and south sidewalls approximately one foot from the floor of the excavation. For CU 5, sampling locations will be surveyed and flagged in the field. Sampling location offsets should not be necessary with the exception of samples that may fall under water along the riverbank where riprap and broken concrete have been excavated. Locations may be moved if a subsurface obstacle such as a rock or tree root prevent collection. Requirements for moving a certification sample location will be discussed in the PSP for Certification Sampling of A9PIII Abandoned Outfall Line – Part Two (DOE 2004d).

All sampling locations in the trench CU (CU 6 west) will be collected from the bottom of the excavation from the bucket of an excavator after the piping, bedding material, and roughly 6 inches of underlying soil have been removed. The goal will be to collect the top 6 inches of soil from the bottom of the excavation.

After the abandoned outfall line has been removed from the CU 6 east, the area that was beneath the piping will be sampled. For CU 5, the sampling interval will be from 0 to 0.5 feet. Twelve samples will be collected from the CUs for analysis. It may be necessary to collect samples using the bucket of an excavator for those sampling locations that fall under the water along the riverbank. The four samples designated as “archive” will be collected and stored in the event they are needed for additional analysis.

4.2 ANALYTICAL METHODOLOGY

Laboratory analysis of certification samples will be conducted using an approved analytical method, as discussed in Appendix H of the SEP. The minimum detection level (MDL) will be set at 10 percent of the

FRL, but the low off-property FRLs may result in difficulties for laboratories to meet 10 percent of the FRL for some analytes. In those instances, the MDL will be set as low as reasonable below the FRL. Analyses will be conducted to Analytical Support Level (ASL) D or E, where the MDL of the FRL is above the Sitewide Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Quality Assurance Project Plan (SCQ) ASL detection level, but the analyses meet all other SCQ ASL D criteria. An ASL D data package will be provided for all of the analytical data. Because results are batched or grouped by CU, all results from a minimum of one of the two CUs will be validated to Validation Support Level (VSL) D. Samples rejected during the validation process will be re-analyzed, or an archive sample may be substituted if there is insufficient material available from the initial sample. Once data are validated as required, results will be entered into the Sitewide Environmental Database (SED).

4.3 STATISTICAL ANALYSIS

Once data are entered into the SED, a statistical analysis will be performed to evaluate the pass/fail criteria for this CU. The statistical approach is discussed in Section 3.4.3, Appendix G of the SEP, and Section 3.4.8 of the SEP Addendum (DOE 2001).

When both CUs 5 and 6 have passed certification, a Certification Report will be issued. The Certification Report will be submitted to the regulatory agencies to receive acknowledgment that the pertinent operable unit remedial actions were completed, and the individual CUs are certified and may be released for interim or final land use. Section 7.4 of the SEP provides additional details and describes the required content of the Certification Report.

4.3.1 Surface Samples (0 to 6-inch)

Two criteria must be met for the CU to pass certification. If the data distribution is normal or lognormal, the first criterion compares the 95 percent Upper Confidence Limit (UCL) on the mean of each primary COC to its FRL, or the 90 percent UCL on the mean of each secondary ASCOC. On an individual CU basis, any ASCOC with the 95 percent UCL for primary ASCOCs (or 90 percent UCL for secondary COCs) that are above the FRL results in that CU failing certification. If the data distribution is not normal or lognormal, the appropriate nonparametric approach discussed in Appendix G of the SEP will be used to evaluate the second criterion. The second criterion is the hot spot criterion, which states that primary or secondary ASCOC results must not exceed two times the FRL. When the given UCL on the mean for each COC is less than its FRL and the hot spot criterion is met, the CU will be considered certified.

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In the event that a CU fails certification, the following scenarios will be evaluated: 1) a high variability in the data set, 2) localized contamination, and 3) widespread contamination. Details on the evaluation and responses to these possible outcomes are provided in Section 3.4.5 of the SEP.